

Training Bobath Methods Better than Feldenkrais Methods to Improve of Balance Among Post Stroke Patients

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Abstract

Stroke is a disease affecting of brain that causes suddenly neurological dysfunction. Stroke can cause damage to brain tissue and clinically in a relatively long period of time and is the most common cause of physical disability such as decreased in the balance. This study aims to determine how much of an increase balance in patients with post stroke after being given Bobath training and Feldenkrais training. This study was an experimental with pretest-posttest group design conducted at Sasana Husada Stroke service and Karmel Stroke Service, in March-April 2015. This study used 14 subject of post stroke patients randomly divided into two groups. Group I was given Bobathtraining and group 2 was given Feldenkrais training. Both groups were given training 3 times a week for total 8 weeks. The balance test measured by Brunel Balance Assessment (BBA) instrument. The results showed that in group I there was an increasing balance of 4.71 ± 1.11 to 9.57 ± 1.72 , while in group II was also an increase in balance of 4.71 ± 0.95 to 5.57 ± 0.98 . Based on statistical tests, there is a signifikan increase of balance in group I and II after training. And training in group I was better than group II in improvement of balance among post stroke patient ($p < 0.05$). It can be conclusion that the training Bobath method is better thanFeldenkrais method to increase the balance of post stroke patients.

Keywords: Stroke, Balance, BBA, Bobath, Feldenkrais

Abstrak

Metode Pelatihan Bobath Lebih Baik dari Metode Feldenkrais untuk Meningkatkan Keseimbangan di antara Pasien Pasca Stroke. Stroke adalah penyakit yang menyerang otak yang menyebabkan disfungsi neurologis secara tiba-tiba. Stroke dapat menyebabkan kerusakan pada jaringan otak dan secara klinis dalam jangka waktu yang relatif lama dan merupakan penyebab paling umum kecacatan fisik seperti penurunan keseimbangan. Penelitian ini bertujuan untuk mengetahui berapa besar peningkatan keseimbangan pada penderita post stroke setelah diberi pelatihan Bobath dan pelatihan Feldenkrais. Penelitian ini merupakan penelitian eksperimental dengan rancangan kelompok pretest-posttest yang dilakukan pada layanan Stroke Sasana Husada dan Pelayanan Stroke Karmel, pada bulan Maret-April 2015. Penelitian ini menggunakan 14 subjek pasien pasca stroke secara acak dibagi menjadi dua kelompok. Kelompok 1 diberi Bobathtraining dan kelompok 2 diberi pelatihan Feldenkrais. Kedua kelompok diberi pelatihan 3 kali seminggu untuk total 8 minggu. Uji keseimbangan diukur dengan instrumen Brunel Balance Assessment (BBA). Hasil penelitian menunjukkan bahwa pada kelompok I terdapat peningkatan keseimbangan $4,71 \pm 1,11$ sampai $9,57 \pm 1,72$, sedangkan pada kelompok II juga terjadi peningkatan saldo $4,71 \pm 0,95$ menjadi $5,57 \pm 0,98$. Berdasarkan uji statistik, ada peningkatan keseimbangan yang signifikan pada kelompok I dan II setelah pelatihan. Dan latihan pada kelompok I lebih baik daripada kelompok II dalam perbaikan keseimbangan antara pasien pasca stroke ($p < 0,05$). Dapat disimpulkan bahwa metode latihan Bobath lebih baik daripada metode amandemen untuk meningkatkan keseimbangan pasien pasca stroke.

Kata Kunci; Stroke, Saldo, BBA, Bobath, Feldenkrais

INTRODUCTION

Stroke is a major problem in health care and at the same time the number three killer in the world. Globally, at any given time about 80 million people suffer from paralysis due to stroke. There are 13

million new stroke patients every year, of which about 4.4 million of them die within 12 months. During the course of their lives, about four out of five families will have a family member who had a stroke.

Independence in activities the main needs in post-stroke patients, the ability to transfer and ambulation often the first priorities to be achieved either from the patients themselves or from their families. Thus, many post-stroke patients who seek out and tried various treatments in any way better medical treatment and alternatif.

Each activity requires both static and dynamic balance. Balance is an important aspect in the process of post-stroke patient improvement. Activities that do require us to react to gravity, and the body will adapt to the objective of maintaining balance. The body's ability to maintain the balance of the normal postural reflex mechanism.

One of the parameters for measuring progress or setbacks post-stroke patient's ability to balance that with Brunel Balance Assessment (BBA). BBA is a measuring instrument that is valid and reliable and designed to measure changes in a short time after the intervention and measure the ability of the patient's functional balance post stroke. This test is also cheap, simple and easy to use.

To improve balance in patients with post-stroke are needed health services that one team is fisioterapi. Physiotherapy especially in patients with post-stroke has a primary goal is to improve functional ability. Various kinds of treatment provided in order to improve the independence of patients. However, all this can not be obtained instantaneously. Various processes have to be passed, ranging from increasing the range of movement of patients in the supine position, tilted left and right, up from a supine position to sitting, to defend themselves in a sitting position, getting up from a sitting position to standing and maintain a position in a standing position, to the patient's ability to walk. To the authors of this study focuses more into improved balance in patients with post-stroke.

In the current study Bobath and Feldenkrais method because both methods have a concept attractive approach in affecting the central nervous system to redress the balance. In addition there has been no previous study comparing the two studies, so that researchers interested in comparing the two studies tersebut.

Bobath method emphasizes the activation of postural position - a position against gravity, involving the recruitment of sensory input to modulate movement through postural stability and movement selectively target increased stability, balance and motion quality in the Feldenkrais Method approach fungsional. activities emphasize on improving the internal representation and awareness movement that will increase the sense of the body in various positions that do the same on

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the right side and the left side body. more active in the Bobath method teaches the patient in the context of real activity in daily life - today. The problems of this study whether training methods Bobath better than Feldenkrais method to increase the balance post-stroke patients?

The purpose of this research is to prove the training of Bobath method is better than the Feldenkrais method to increase the balance post-stroke patients.

MATERIALS AND METHOD

This research is experimental design used is Pre and Post Test Group Design. The study was conducted in two places, namely in Sasana Husada Stroke Service, South Jakarta and West Jakarta Karmel Stroke Service.

This study population is a population of patients with post-stroke affordable in Sasana Husada Stroke Service, South Jakarta and West Jakarta Karmel Stroke Service, with the following criteria: age 45-65 years. The value of NIHSS under 15. MMSE Values above 26. From the post-stroke patient population sample obtained with techniques simplerandom samplingsebanyak 14 patients were then divided into two groups by random allocation of each of the 7 samples in each group.

The implementation phase of the study involves: Set up measuring tools. Make a schedule data retrieval. Initial tests by measuring the balance with Brunel Balance Assessment. Training is conducted during the 8 weeks of training, with the frequency of exercise three times a week. At every training session with Bobath method and the method Feldekrais administered over 1 hour. The final test by re-measuring balance with Brunel Balance Assessment.

Balance is the relative ability of the body to control the center of gravity or center of mass of the body against the abutting field in a state of static and dynamic so that the body can maintain a posture in anticipation of a movement that happened, measured by Brunel Balance Assessment test that measures the ability of functional balance post-stroke patients. This test consists of three stages: sit, stand, and move (running) and consists of 12 levels overall test. The balance is said to be increased if there is an increase in levels in the tests performed before and after training.

Data were analyzed for were processed and analyzed the characteristics of the study subjects related to age, sex, BMI, MMSE score, score NIHSS, Barthel Index, distribution of balance, education and employment data were taken at the

time of assessment and measurement of the first or beginning of the test.

Distribution balance data from each treatment group. Because the sample studied amounted to <30 samples and to be more sensitive to the value of significance $p > 0.05$, the statistical formula used is Shapiro Wilk test. And the normal distribution of data it will proceed with parametric tests.

Test homogeneity using levene's test of homogeneity variations varians untuk analyze the data of each group perlakuan. Dengan significance p value > 0.05 then the second data group is homogeneous.

Test the hypothesis or different test data against the value after the treatment of the two treatment groups Bobath and training Feldenkrais training aims to compare the mean results an increase in the balance effect post-stroke patients after the intervention or treatment in each of these groups, because the normal distribution of data using independent t test.

RESULT AND DISCUSSION

Description of Research Data

Description of research subjects characteristic data including numerical data is the variable age, NIHSS score, MMSE, BMI, and Barthel Index.

Table 1. Characteristics Of Samples

Characteristics	Group I (n=7)		Group II (n=7)	
	Mean	SB	Mean	SB
Age (tahun)	55,43	5,56	52,14	2,73
NIHSS (skor)	12,29	0,95	12,14	1,22
MMSE (skor)	28,00	1,41	28,43	1,13
BMI (skor)	21,97	1,98	20,74	1,06
Barthel Index	94,19	1,68	93,00	1,16

Based on Table 1 indicates that the sample group I had a mean age of 55.43 ± 5.56 in group II 52.14 ± 2.73 , it suggests that this sample represents a group of older adults age category. Based on a study sample NIHSS score the first group had a mean of 12.29 ± 0.95 and in group II had a mean of 12.14 ± 1.22 , it shows that all the post-stroke patient was classified as a mild stroke. Based on the MMSE score, the sample group I had a mean 28.00 ± 1.41 and group II had a mean of 28.43 ± 1.13 , it indicates that the two sample groups do not have cognitive impairment. Based on BMI in group I had a mean of 21.97 ± 1.98 and in group II had a mean

of 20.74 ± 1.06 , it shows that in both samples are at a normal weight. Based on the Barthel Index in group I had a mean of 94.19 ± 1.68 and in group II had a mean of 93.00 ± 1.16 , it shows that in both samples at the level of mild dependence.

Test Normality and Homogeneity Data

To make a selection in the use of statistical hypothesis testing, so in this study to test the analysis requirements that testing normal distribution and homogeneity of variance test. The statistical tests used include the Shapiro-wilk test for normal distribution and Levene's test test for homogeneity of variance.

From Table 2 shows that the test for normality of distribution using the Shapiro-wilk test obtained probability value to group data before training in group I, the value of $p > 0.05$, which means that the normal distribution of data. In group II, the value of $p > 0.05$, which also means that the normal distribution of data. For the data group after training in group I and II, the value of

Table 2. Normality Test and Homogeneity

group Data	Normalitas dengan Shapiro-		Levene's	
	wilks test		test	
	Group I (n=7)	Group II (n=7)		
	Statistik	p	Statistik	P
Before	0,92	0,48	0,87	0,18
After	0,98	0,96	0,94	0,61

$p > 0.05$, which means that the normal distribution of data. On the test of homogeneity of variance performed using Levene's test $p \text{ value} > 0.05$ for groups of data prior to training which means that the data are homogeneous. In the data group after training $p \text{ value} > 0.05$, which means that the data are homogeneous.

By looking at the results of the test requirements analysis, the researchers decided to utilize parametric statistics for data that is normal.

Test Different Balance After the Second Group Training

Balance different test after training in group I and II is by independent t test.

Table 3 is based on testing the hypothesis by using different tests after treatment that the Independent T test $p \text{ value} = 0.000$ ($p < 0.05$), which means that there is a significant difference in the average value of keseimbangan sudah training group I (training methods Bobath) with group II

(training Feldenkrais method). It shows that the intervention in group I (training methods Bobath) significantly better than the intervention group II (Feldenkrais method training) to improve balance in patients with post-stroke.

The main finding in this study is better than the Bobath method Feldenkrais method in improving balance post-stroke patients. Based on testing hypothesis by using different tests after treatment that the Independent T test p value = 0.000 ($p < 0.05$), which means that there is a significant difference in the average value of keseimbangan sudah training group I (training methods Bobath) with group II (training methods Feldenkrais). It shows that the intervention in group I (training methods Bobath) significantly better than the intervention group II (Feldenkrais method training) to improve balance in patients with post-stroke.

Improvement of balance in patients with post-stroke as the effects of the training methods of Bobath due to an increase in the body's ability to: Improvement of postural control, righting and protective reaction, sensory receptor, improved posture, repair Central of Mass (COM), Center of Gravity (COG), Line of Gravity (log), and Based of support (BOS), Stability Limit.

The balance relates to the setting posture that involves little muscle activity to maintain body stability. The function of the setting posture is to keep the body in a balanced position. Changes the center of gravity can be improved by setting good posture. With Bobath method of stroke patients will learn to adjust their positions so as to create a good balance in doing activity.

Training with Bobath method includes setting postures to maintain the center of gravity and working sensory input in the form of visual information, proprioceptive and auditory that will improve postural control and stability of the body. The factors that influence on improving patient keseimbangan pada stroke.

Improvements balance on the Feldenkrais method occurs due to an increase in sensory information is received by the brain, so the internal representation of the cortex for the better, it led to increased limb picture in the brain, so that the motion controls of the brain becomes better. Move the Feldenkrais method is slow and rhythmic provide a greater opportunity to absorb the motion information and record the experience on otak.

Training Bobath method focuses on problem solving orientation of individual and personal with functional activities undertaken by post-stroke patients in their daily lives, so that exercise is more

easily adapted by patients post stroke. The Feldenkrais method emphasizes on increasing awareness and understanding of how the body moves with efficient which might make post-stroke patients need a process or a longer time in adapted.

This makes post-stroke patients may be more quickly increased balance training Bobath method. Systematic problem solving in a more comprehensive method of Bobath start at the level of sensory receptor stimulation, activation of postural control serta selective movement is directly applied in the context of daily activities, making the process of motor learning becomes more efisien.

Metode Bobath notice all aspects that affect the movement of both the external drive (gravity, goal activity, environmental) and internal drive (motivation, individual goal, the limbic system, cognitive). While the Feldenkrais method to optimize the sensory receptors and coordination of movement.

Tabel 3. Comparison between Bobath and Feldekrais

Variabel	Group I		Group II		p-value
	Mean	SB	Mean	SB	
Balance	9,57	1,72	5,57	0,98	0,00

It shows that the Bobath method is better than the Feldenkrais method to increase the balance in post-stroke patients as measured by the test parameters Assessment yang Brunel Balance consists of 12 levels overall test. Where the training effect Bobath improve the balance of 103%, while the Feldenkrais training of 18.3%. These results are consistent with the results obtained by Agustiyawan, 8 that the training methods Bobath better than methods Feldenkrais in increase walking velocity, as well as Main, 9 that training method Bobath better than Feldenkrais method in improving postural stability in patients with post-stroke.

CONCLUSION

Based on the analysis of the research that has been done and the discussion can be concluded that the training methods of Bobath better than Feldenkrais method in improving the balance in post-stroke patients. The training effect Bobath improve the balance of 103 %, while the Feldenkrais training of 18.3 %.

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